Massachusetts Drought Management Task Force – Meeting Summary
August 8, 2022 conducted remotely via Zoom

Attendees:

Vandana Rao, EEA (co-chair)	Erin Graham, DCR Office of Water Resources	Mark Piermarini, Leominster Water
Sara Zalieckas, MEMA (co-chair)	Gardner Bent, USGS	Marlena Spurr
Aaron Kupec, Greenfield	Gary Moran, MassDEP	Marlo Warner II, Greenfield
Adam Kautza, MassWildlife	Gerald Clarke, Chair Dover BOH	Matt Baskin
Adelina Huo, Office of Rep. Hogan	Gus Steeves, Southbridge	Matthew Silverman, Littleton Water Department
Alan Taubert, Salem and Beverly WSB	Hingham, Hull, North Cohasset	Meg Blanchet, DPH
Alex Belote, DCR	Jake Wark	Michael Botelho, MDAR
Alison Dixon, HVA	Janet Wu,	Michael Souza, MEMA
Anne Carroll, DCR OWR	Jason Pollender, USGS	Miriam Wasser, WBUR
Bill Gode, DCR	Jeffrey Colby	Nicole Belk, NWS Boston/Norton MA
Brad Chase, Div. of Marine Fisheries	Jen D'Urso, MassDEP	Olivia Lemmon, Spectrum News 1
Brian Wick, CCCGA	Jimmy Powell, Jones River WA	Olivia Marble
Brit Westergard, NWS	Joe Cerutti, MassDEP	Peter Ostroskey, State Fire Service
Chris Van Buskirk	John Frost	Pine Dubois, Jones River WA
Christopher Gallagher, Foxborough DPW	John Gregoire, MWRA	Richard LaTour, MEMA
Cole LaPlante	John Scannell, DCR	Robert Worthley, Foxborough Water
Dan Laprade, MWWA	John Westerling	Ron Horwood, NOAA/NWS/NRFC
Dan Van Schalkwyk	Jonathan Carey, Newburyport	Russell Tierney, Weir River Water
Danielle Burney, EEA	Julia Blatt, Mass Rivers	Samantha Holt, Newbury Conservation Agent
Dave Bryant, MEMA	Julie Greenwood-Torelli, Cambridge Water Dept.	Sara Cohen, DCR
Dave Celino, DCR Fire	Kate Bentsen, MA DFG/DER	Sarah Traore
Dave Clemons, DFS	Katharine Lange, MRA	Shree Khanolkar
David Hilgeman, MassDEP	Kathleen Mason	Stephen Estes-Smargiassi, MWRA
Don Cooper, Seekonk Water	Kimberly Abraham, Ayer	Todd Melanson, Chelmsford Water District
Don Couture, Manager Farmer Daves	Kourtney Allen	Tom Lyons, MEMA
Donald Bunker, NEWWA	Kurt Gaertner, EEA	Tom Trainor, Sherborn Groundwater Protection Cmte.
Donald Davenport,	Lexi Dewy, WSCAC	Vanessa Curran, DCR OWR
Douglas Hutchenson, DCR	Marcos Pareto, DPU	Vanessa Farny
Elise Tarnauskas, Springfield WSC	Marielena Lima, CRWA	Viki Zoltay, DCR OWR
Eric Lindquist, CT Office of Policy and Management	Mark Holley	William Harvey

Introductions & Announcements

Rao called the meeting to order at 1:05PM, introduced herself, thanked and welcomed task force members and other attendees. Introduced Sara Zalieckas of MEMA who co-chaired the meeting. They reviewed the following ongoing activities by EEA and MEMA:

- Coordinating to operationalize the Drought Management Plan (DMP), focusing on areas in drought level 2 and 3, tracking impacts and mobilizing resources and information
- Hosting call with cities and towns on 8/10/22 on drought levels, impacts, and resources
- Coordinating with DCR on managing properties and facilities for drought and on visitor education
- Coordinating with DEP on impacts to water supplies and wetlands
- Coordinating with DPH on matters related to private wells
- Working to get information to DCAMM facilities managers on water conservation and task force recommendations
- Connecting on guidance for drafting state of emergency declaration for drought, if needed
- Reviewing state contract for bottled water and other water vendors
- Reviewing established channels for resource requests from municipalities
- Managing drought website

Review of Massachusetts Drought Management Plan (DMP)

DCR Reviewed the key elements of the DMP for all attendees.

Updates on Current Conditions and Impacts from Members of the Task Force

<u>Streamflow and Groundwater Conditions in Massachusetts – USGS</u>

Jason Pollender shared: Surface water low across the state. Many streams are near or at record lows. Groundwater also trending down, many into critical drought levels.

<u>Northeast River Forecast Center - National Weather Service (NWS) Update</u>

Ron Horwood shared:

- River and stream flows have degraded across the Commonwealth since last DMTF meeting in late July. Many gauged sites are passing flow in the lowest 10 percent of the historical record for this time of year.
- The North Nashua River at Fitchburg was at a record low flow for 7 August with a 49-year period of record.
- Rain chances are promising this week. 1-2 inches of rainfall is expected over the next 10 days with the higher values possibly across east coastal Massachusetts.
- NERFC ensemble river forecasts call for many Massachusetts rivers to see flow increases to near median early August levels this week.

<u>NWS Weather Reports and Forecast</u>

Nicole Belk of NWS shared:

- Eastern MA eastern MA, Cape Cod and Martha's Vineyard generally really low precipitation over July – all less than 50% of normal rainfall; areas more westward and Nantucket fared somewhat better. Boston had 4th driest July on record.
- Average temperatures were 1-3 degrees above normal, with eastern MA and the Cape averaging 3-5 degrees above normal. Boston had 3rd warmest July on record. Preliminary shows Blue Hills

and Lawrence both had the highest July temperatures on record and warmest all-time month, going back to 1893. A little better moving westward.
- August temperatures have been 5-8 degrees above normal so far (Aug 1 – 7).
- Short-term relief on the horizon, with temperatures becoming more seasonable by mid-week; substantial rain may also come mid-week for many areas.
- 8 to 14-day forecast: temperatures above normal; precipitation around normal.
- 3-month forecast: temperatures much above normal; precipitation above normal, too.

Water Supply - MassDEP

Jen D'Urso shared:

MassDEP has 345 withdrawal permits across the state, and most require reductions in nonessential water uses, triggered either seasonally or by low streamflow or groundwater triggers at assigned gages or monitoring wells or by drought declaration or 7-day low flow. 54 USGS streamflow gages and 6 USGS monitoring wells are used as triggers. While only 4 streamflow gages were triggered in May, 49 were triggered on August 1 (with a peak at 53 on July 5). Groundwater levels have remained steady, with one well at trigger level since May. As recently as June 6 there were no 7-day low flow triggers but by July 25 there were 20. Mandatory outdoor watering restrictions of two days or fewer have risen steadily from 28 in May to 91 on August 1. 35 new suppliers added watering restrictions since July 6, including many of <=1 day/week.

MWRA

John Gregoire shared:

- Quabbin Reservoir remains well within normal operations at nearly 93.6% full but is clearly dropping. This time last year Quabbin was still spilling. Since the last DMTF meeting, the reservoir lost about 1 Ft. (~6.8 BG). High demand season combined with the drought are factors. The seasonal Quabbin transfer to Wachusett Reservoir continues.
- Wachusett Reservoir is holding well at the trial lower band of 389' +/- . The prior operating band was 390' – 391.5'.
- 6 of the previous 7 months have been below long-term average precipitation records across the watersheds. Comparison of July 2022 to July last year, which saw record rainfall, is remarkable.
- At Quabbin, the minimum statutory release to the Swift River is 20 MGD, which rises to 71 MGD based on CT River flow conditions at Montague. MWRA releases in June were well above the minimum. They use a 3-day average for Montague. There was a brief lag where releases fell below the requirement but they caught up quickly. Looking at the Swift releases longer term (since 2016 drought), MWRA is always above the statutory release.
- At Wachusett, the minimum statutory release is 1.72 MGD. So far this summer, MWRA has been releasing substantially more water than this minimum. Longer term Nashua releases are always above the minimum statutory release and, most of the time, very substantially above the minimum, by moving excess water not needed for water supply downstream.
- The Sudbury system reservoirs more closely respond to drought conditions, similar to the area lakes and ponds. MWRA doesn't normally add Wachusett water to them and they both dropped below normal operating band this summer.
- MWRA has been putting out "responsible use" messaging to their water customers, via website and Twitter.

Massachusetts Water Works Association

Daniel Laprade shared: Some member utilities are having some capacity limits; others are faring well. Some have said they have trouble getting the message out to water users about local restrictions. Details on individual systems were provided in written form to Vandana Rao but were not shared during the meeting.

Department of Public Utilities

Marcos Pareto shared water conservation actions taken by Aquarion Water Company since the last update, in the communities in which it operates:

- Millbury and Oxford, which are at Level 3 critical drought and Dover, which is at Level 2 Significant Drought: Until September 30, Aquarion is mandating residents and businesses halt all non-essential outdoor water uses including irrigation of lawns via sprinklers and automatic irrigation systems.
- Plymouth, which is at a Level 2 significant drought: Until Sep 30, Aquarion is requiring residents and businesses to irrigate at most one day per week.
- Sheffield is at Level 1 Mild drought and Marcos is not aware of any new conservation restrictions there.

DEP Wetlands

David Hilgeman explained the implications of drought on classification of intermittent streams. DEP has updated drought designations from this summer on its website to help local conservation commissions understand where drought is impacting flow of streams. Central region has reported low streamflow and surface elevations and wilting vegetation in wetlands; Western region reported the same water use conditions that Jen D'Urso reported on. The Watershed Planning division has conducted stream assessments and have found 10 streams that have been dry in 2022. Tom Maguire sent reminder that drought recovery usually takes as much time as drought development.

Department of Fish & Game – DER and MassWildlife

Kate Bentsen highlighted the following stream condition observations:

- Streams and wetlands throughout the state are showing lower flows and water levels, but the degree varies based on the level of human alteration in the watershed.
- In the Central region, Parkers Brook in Oakham is a long-term site that is part of the EPA Reference Monitoring Network. The watershed is 5.5 sq mi and was selected since there is minimal human alteration in the watershed. The watershed has a good amount of sand and gravel deposits as well as forest and wetland area, so flows do not get as low as at other sites. The 2016 drought was by far the lowest in the last 10 years of monitoring. Flows this year have so far been similar to flows during the 2020 drought.
- Also in the Central region is Browns Brook in Holland, another EPA Reference Monitoring Network site. The watershed area is also 5.5 sq mi and also minimally impacted. However, since the watershed conditions are a bit different, there is more variation in flows during the summer and fall months than at Parkers Brook. Flows in July and August were similar to those months in 2020 and have not yet hit the lows of September 2020.
- In the Northeast, DER worked with Littleton and Westford to develop a low streamflow release plan to for the dams at Spectacle and Forge Ponds, when water levels in the ponds are sufficient to allow for releases. Flow releases occurred during the 2020 drought, but pond levels this

summer have not been sufficient to release water, leading to no and low flow conditions downstream, including no flow for several weeks, with water only in stagnant, isolated pools. Also, the lip of the culverts, particularly on the upstream side, is not flush with the streambed. This is true of many culverts. When flows are low, this can artificially disconnect streamflow, effectively acting as a barrier to fish and other animals.

- In the Southeast at High Street Dam in Bridgewater DER is working with the town and partners to remove the dam to improve fish passage and connectivity along Town River. Low water levels create stagnant, warm water in impoundments that is prone to algal blooms and low dissolved oxygen. The little water that does flow over the spillway is warm and low in oxygen, negatively affecting the downstream resource areas. Also, the fishway has lower flows. Many fish ladders were designed to pass certain kinds of fish during certain flows. However, many resident (non-migratory) fish will move within the stream channel to find better conditions, particularly during low flows. Dams and low water in fish ladders prevent that movement and make fish more vulnerable to high temperatures, low oxygen, limited food resources, and higher predation.
- Brad Chase from DMF is keeping a watch on flow level for the fall for the outmigration of fish that need to return to the ocean.

Adam Kautza shared that all districts are reporting low flows. Conditions are especially bad in the east and on the Cape. They are starting to see conditions similar to 2016, where streams are reduced to isolated ponds with high temperatures, low oxygen, and vulnerability to predators.

Massachusetts Rivers Alliance

Julia Blatt explained MRA is a nonprofit organization with 83 member groups; their mission to protect streams and rivers across state. Members are reporting low flows in all streams, including low flows of record at several sites; lots of dry stream beds. The Charles River is doing very poorly. The Parker River is dry in some locations. The Merrimack is showing substantial sections of riverbed, which is very unusual. Water quality is worsening due to low flows. The Ipswich River is at very low flows, affecting water quality; it is dry in Middleton. Third Herring Brook in Norwell is also dry.

WSCAC

Lexi Dewey shared photos of low streams of the South River in Ashfield, the Mill River in Conway, Mohawk Trail in Savoy, and Buffam Brook in Pelham. She focused on Berkshire County to highlight that this area which had been doing better is now showing very low flows. She shared that Berkshire, Franklin and Hampshire County rivers and streams are now deeply affected by the drought. Amherst's Atkins reservoir is down 6-8 feet.

Agriculture - DAR

Michael Botelho reported that moderate to major impacts are being reported across all regions. Farms that pull from surface waters are sometimes unable to do so due to low streamflow. Irrigation for those capable is becoming a full-time job with significant costs. Crops are showing stress and wilting from heat and drought. Special concern for third and fourth planting. Limited germination is taking place for the fall and winter crops (potatoes, carrots, squash etc.). Cranberry producers have concern about how to manage harvest which requires high water use. DAR is working with industry on technical mitigation and management through the drought.

Fire Danger - DCR Fire

Dave Celino shared the following update:

- There have been 769 fires for the year to date; 1,203 acres burned; 57 homes threatened (probably more, but not reported); 34 structures damaged or destroyed.
- KBDI Fire Index is at 97th percentile in eastern areas with increases in control challenges. August values are moving up: above 400 everywhere but Nantucket. Northeast and Central into 600's and SE in 500's. These values are all much higher than last month and approaching the values of 2016.
- All fires are burning 10-15" into parched soil layers.
- Live fuels are showing serious drought stress in the Northeast and Southeast, critical in some areas and now able to contribute to fuel loads.
- Most fires with any advanced burning time will become extended operations over several days, with increased risk to firefighter safety and capacity stress on firefighting resources.
- Very concerning fire in Gloucester at urban interface, requiring National Guard helicopter tactics mobilized through MEMA. Demand for aviation tactics may increase.
- Smoke effects from extended drought fires are expected to increase.
- Campfire messaging should now be that if you leave an abandoned campfire, it WILL escape and become a wildfire. A number of existing fires are due to this behavior. Must drown campfires.

Department of Fire Services

Peter Ostroskey shared that all the drought impacts being discussed at this meeting are impacting state firefighting operations. Local water bodies are often needed for firefighting operations, and some are now simply not available due to drought, requiring outside water to be brought in. Wildland and interface fires are very challenging. DFS is raising all these issues with local fire chiefs and planning for the early mobilization of resources and more complex incident response tactics. DFS Public Information Office has been asked to coordinate with EEA and DCR in messaging related to fire risks and public safety recommendations.

DCR Engineering and Water Supply Protection

Bill Gode shared that they are witnessing extremely low water levels. Doing what they can to maintain levels where we have control. John Scannell shared that the forestry program uses flyover imaging to assess forest condition. Right now, there is no evidence of widespread drought impacts to forest, but often tree mortality comes not directly from drought but from the weakened state of the trees making them subject to insect and other stresses, so that mortality may still be to come. Rao added that the root zone can also be compromised, making trees vulnerable to blow-down.

Department of Public Health

Meg Blanchet shared that there are no specific drought-related impacts to report. DPH works with recreational water bodies, including tracking bacterial indicators from local water bodies. All public and semi-public bathing beaches are monitored for fecal bacterial and some for toxic algae. Under these dry hot conditions, they tend to see the harmful algal effect. In wetter weather, dangers are more around the fecal bacteria.

Drought Indices Report

Viki Zoltay from DCR/OWR gave overview and reviewed indices, as follows: January through April had variable precipitation with scattered minimal impacts, while May through July, conditions have deteriorated.

Precipitation:

- SPI has been in steep decline over the month of July; most of eastern state very low, with SE and Cape having many near record lows. Cape is at the 1 percentile for the 1-month look-back, while the Western and Central Regions were at ISL 0 with some areas below normal.
- 3-month look-back shows all regions at level 2 and 3, with some in the single digits of percentiles.

Streamflow:

- Streamflows low across the state. Almost half of state gages have been in the 0-10 percentile range for much of July. Northeast and Southeast streamflow index is at level 3; Western at Level 1; rest of regions at Level 2.

Groundwater:

- Some normal conditions have persisted in some areas of the state, as groundwater shows drought impact later than other indices, but state now showing more than half the gages below 30th percentile with some very low.
- Two regions in Level 2 (CT River and NE); Central, SE, Islands at Level 1; WE and Cape at 0.

Evapotranspiration:

- Even CMI (which state is phasing out as an index) is showing level 1 and level 2 moving east across the state
- EDDI showing very high index severity levels; the 1-month lookback period was elevated across the state, with the majority of the state at the highest level, Level 4, at the end of July.

KBDI:

- Elevated across the state - SE at level 3; WE and Islands at level 1, everywhere else at Level 2

Lakes and Impoundments:

- NE and SE at level 3, Cape at Level 2, Central and CT Level at 1; WE level 0

Discussion of Drought Level Recommendations

For Western and Islands Regions, recommendation is to keep these at the status quo of Level 1.

Western: DMTF members agreed on Level 1.

Islands: DMTF members agreed on Level 1.

For Cape Region, conditions have clearly and quickly deteriorated from previous Level 1; Level 2 is recommended.

Cape Cod: DMTF members agreed on Level 2.

For Southeast, conditions have also quickly deteriorated from previous Level 2, with 4 of 5 indices at Level 3. Level 3 is Recommended. Comment that Plymouth County is in better condition than Bristol County, but better to use Level 3 for the whole region. Also note that USDM has this region at severe drought (corresponds to our Level 3).

Southeast: DMTF members agreed on Level 3.

Northeast has stayed in poor condition. Recommend keeping it at Level 3, which it was at previously.
Northeast: DMTF members agreed on Level 3.

Central has surprisingly shown some improvement. Was at Level 3. DMTF is now meeting every two weeks, so there might be some concern in bringing them down to Level 2 if only to push them back to Level 3 in two more weeks. Comment that North Nashua is at historic lows. Additional comment that the improvements of the type we see here are often short-lived, and conditions from August are so far not looking great.
Central: DMTF members agreed on Level 3.

CT River Valley has stayed somewhat steady in the Level 2 range, so data would indicate keeping at Level 2. However, based on the data, this region is worse off than the Central Region, which is being recommended for holding at Level 3. This is heavily influenced by the CT mainstem portion of this region, which has 3 indices at Level 3. Agricultural impacts are being reported as very high in this region.
CT River Valley: All considerations in balance, the DMTF members coalesced around calling this region Level 3, based on heavy influence of the CT watershed running through the center of this region.

Meeting Ended
Rao highlighted the messaging that would be accompanying the new set of declarations and thanked everyone for their considerable time and expertise. The meeting was adjourned at 3:42PM.